



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,225	07/06/2005	Archie W. Garner	13015/38719BUS	7214
4743	7590	12/16/2008	EXAMINER	
MARSHALL, GERSTEIN & BORUN LLP 233 S. WACKER DRIVE, SUITE 6300 SEARS TOWER CHICAGO, IL 60606			GILLESPIE, BENJAMIN	
ART UNIT	PAPER NUMBER			
	1796			
MAIL DATE	DELIVERY MODE			
12/16/2008	PAPER			

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/521,225	Applicant(s) GARNER ET AL.
	Examiner BENJAMIN J. GILLESPIE	Art Unit 1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 22 October 2008.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-3 and 5-27 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-3 and 5-27 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO-1668)
 Paper No(s)/Mail Date _____

4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date _____

5) Notice of Informal Patent Application

6) Other: _____

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 10/22/2008 has been entered.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 26 and 27 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Regarding the triol mole% range of claims 26 and 27, the examiner notes that page 9 of applicants' specification provides sufficient support for the *upper limit* of said range, however, the relied upon example 3 does not constitute sufficient support for the *lower limit* of the claimed range.

3. Applicants' relied upon example 3 does not disclose a *range* of triol mole %, and therefore said example only provides support for the single mole % value of 1.4. Furthermore, even if applicants maintain that example 3 is sufficient support for the lower limit of triol, it

should be noted that said range still constitutes new matter since claim 1 and 22 are not limited to any type of triol, yet example 3 only provides support for triol consisting of trimethylolpropane.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-3, 5-12, 16-21, and 26 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomotsugu et al ('613). Tomotsugu et al teach a urethane acrylate resin comprising the reaction product of hydroxyl-functional polyester, polyisocyanate, and 2-hydroxyethyl (meth)acrylate. (Abstract; col 2 lines 64-68; col 3 lines 1-13). In particular, patentees explain that the polyester polyol is the reaction product of aliphatic cyclohexane-dicarboxylic acid, and a mixture of diol and triol, specifically 60-100% diol and 0-40% triol, wherein said diol consists of compounds such as butanediol, neopentyl glycol, and pentanediol, and said triol consists of glycerol and trimethylolpropane (Col 2 lines 30, 39-46, 54-53).

5. The resulting composition has no residual free isocyanate, and further contains additional components such as pigments and initiators (Col 4 lines 46-63; col 5 lines 56-58). Finally, Tomotsugu et al teach that the resulting urethane acrylate is useful in coatings, and based on analogous reactants and overlapping stoichiometry the position is taken that said composition would inherently exhibit properties that would satisfy the claimed "gel coat" limitation (Claims 6 and 7). Finally, it is noted that Tomotsugu et al fail to teach methodology corresponding to "the reaction mixture is formed by adding the diisocyanate to a blend of the oligoester and

hydroxyalkyl(meth)acrylate," however, the claimed composition does not appear to be patentably distinct from the urethane acrylate disclosed by Tomotsugu et al.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tomotsugu et al ('613). As previously discussed, Tomotsugu et al teach branched urethane acrylates, wherein said urethane acrylate is the reaction product of polyester polyol, diisocyanate, and hydroxyl-functional acrylate. In particular, said polyester polyol is the reaction product of diol, triol, and dicarboxylic acid, wherein said triol may comprise between 0 and 40 mole% based on 100 mole% of diol+triol; however patentees fail to explicitly teach the claimed mole% of claim 26.

8. Nevertheless, one of ordinary skill would understand that said triol content controls the degree of branching in the resulting urethane acrylate, and therefore helps control the degree of

crosslinking once the acrylate groups are reacted, i.e. said triol content is a result effective variable. Therefore, it would have been obvious to one of ordinary skill in the art to arrive at the range of claim 26 since it has been held that where the general conditions of a claim are disclosed by the prior art, finding an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

9. Claims 1-12, 16-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomotsugu et al ('613) in view of Bristowe et al ('837). Tomotsugu et al teach a urethane acrylate resin comprising the reaction product of hydroxyl-functional polyester, polyisocyanate, and 2-hydroxyethyl (meth)acrylate. (Abstract; col 2 lines 64-68; col 3 lines 1-13). In particular, patentees explain that the polyester polyol is the reaction product of aliphatic cyclohexane-dicarboxylic acid, and a mixture of diol and triol, specifically 60-100% diol and 0-40% triol, wherein said diol consists of compounds such as butanediol, neopentyl glycol, and pentanediol, and said triol consists of glycerol and trimethylolpropane (Col 2 lines 30, 39-46, 54-53).

10. The resulting composition has no residual free isocyanate, and further contains additional components such as pigments and initiators (Col 4 lines 46-63; col 5 lines 56-58). Finally, Tomotsugu et al teach that the resulting urethane acrylate is useful in coatings, however patentees fail to disclose a method of production wherein the polyester is combined with the hydroxyethyl (meth)acrylate before the addition of diisocyanate, or specify the resin as a "gel coat" (Claims 6 and 7).

11. Bristowe et al teach an acrylate-terminated urethane coating composition comprising oligoester, isophorone diisocyanate, and hydroxyethyl acrylate (Abstract; col 2 lines 1-9, 35-36; col 4 lines 42; and col 5 line 35). Bristowe et al go on to teach a preferred method of production

wherein the oligoester is blended with the hydroxyethyl acrylate, forming an intermediate and then reacted with diisocyanate (Col 5 lines 67-68; col 6 lines 1-7). Bristowe et al explain that the disclosed method allows for better control of the exothermic reaction and minimizes the formation of by-products without substantially affecting the nature of the resulting vinyl ester urethane (Col 6 lines 17-22). Therefore it would have been obvious to one of ordinary skill within the art at the time of invention to utilize the preferred method of Bristowe et al in Tomotsugu et al based on the motivation that both teach vinyl functional urethane esters having analogous backbone architecture, and the method of Bristowe et al allows for better control of reaction conditions and while producing an improved product.

12. Regarding applicants' claimed "gel coat" limitation, although Tomotsugu et al fail to refer to the urethane acrylate composition as a "gel coat," based on analogous reactants, stoichiometries, and method of production, one would reasonably expect said urethane acrylate to exhibit the same properties as claimed by applicant.

13. Finally, regarding claim 27, Tomotsugu et al teach the polyester polyol is the reaction product of diol, triol, and dicarboxylic acid, wherein said triol may comprise between 0 and 40 mole% based on 100 mole% of diol+triol; however patentees fail to explicitly teach the claimed mole %. Nevertheless, one of ordinary skill would understand that said triol content controls the degree of branching in the resulting urethane acrylate, and therefore helps control the degree of crosslinking once the acrylate groups are reacted, i.e. said triol content is a result effective variable. Therefore, it would have been obvious to one of ordinary skill in the art to arrive at the range of claim 26 since it has been held that where the general conditions of a claim are

disclosed by the prior art, finding an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

14. Claims 1-3, 5-21, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sirkoch et al ('003). Sirkoch et al teach coatings comprising urethane acrylate produced by reaction (a) isophorone diisocyanate, (b) polyester polyol, and (c) hydroxylalkyl(meth)acrylate, wherein said coating further comprises pigment paste, free radical initiator, and said urethane acrylate is cured via free radical polymerization (Abstract; col 3line 35-43; col 4 lines 6-8; col 5 line 45; col 6 lines 6-12). Regarding component (b), patentees teach it is the reaction product of dicarboxylic acid, such as adipic acid, and multi-functional alcohol, such as hexanediol, neopentyl glycol, and trimethylolpropane (col 4 lines 11-41).

15. Regarding the claimed mole % of triol, the examiner would like to point out that since it is the only tri-functional compound, it would directly control the degree of branching in the final coating, and therefore the resulting degree of crosslinking in the final coating composition, i.e. said triol mole % is a result effective variable. Therefore, it would have been obvious to one of ordinary skill in the art to arrive at the claimed triol amount since it has been held that where the general conditions of a claim are disclosed by the prior art, finding an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Finally, the examiner notes that Sirkoch et al fail to teach methodology corresponding to the "the reaction mixture is formed by adding the diisocyanate to a blend of the oligoester and hydroxylalkyl(meth)acrylate" limitation of claim 1, however, the claimed composition does not appear to be patentably distinct from the urethane acrylate disclosed by Sirkoch et al.

16. Claims 1-3, 5-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sirkoch et al ('003) in view of Bristowe et al ('837). As previously discussed, Sirkoch et al teach coating compositions comprising urethane acrylates, however patentees fail to teach the claimed methodology of claims 1 and 22.

17. As previously discussed, Bristowe et al teach an acrylate-terminated urethane coating composition comprising oligoester, isophorone diisocyanate, and hydroxyethyl acrylate, wherein the oligoester is first blended with the hydroxyethyl acrylate, forming an intermediate mixture that is then reacted with diisocyanate (Col 5 lines 67-68; col 6 lines 1-7). This method allows for better control of the exothermic reaction and minimizes the formation of by-products without substantially affecting the nature of the resulting vinyl ester urethane (Col 6 lines 17-22).

18. Therefore it would have been obvious to one of ordinary skill within the art at the time of invention to utilize the preferred method of Bristowe et al in Sirkoch et al based on the motivation that both teach vinyl functional urethane esters having analogous backbone architecture, and the method of Bristowe et al allows for better control of reaction conditions and while producing an improved product.

Response to Arguments

19. In view of applicants' amendments filed 10/22/2008, the rejection of claims 1-3, and 5-25 under 35 U.S.C. 112 2nd paragraph have been withdrawn.

20. In view of applicants' amendments filed 10/22/2008, the rejection of claims 1-3, and 5-25 as being unpatentable over McBain et al ('053) in view of Bristowe et al ('837) have been withdrawn.

21. Applicant's arguments, filed 10/22/2008, with respect to the rejection of claims 1-3 and 5-27 as being unpatentable over Tomotsugu et al ('613) in view of Bristowe et al ('837) have been fully considered, but are not persuasive.

22. Applicants argue the claimed invention is patentable over the prior art because

The present gel coat resin is made *via* a different process and yields a composition *comprising* (i) a branched compound of structural formula (I) wherein $n > 0$, (ii) a compound structure formula (I) wherein $n = 0$, and (iii) *other* compounds, such as acrylate-isocyanate-acrylate, that simply are not present if the ingredients are reacted according to the method of the '613 patent.

23. However, applicants have not set forth any factual data supporting this position, and it currently appears to be based on an unsubstantiated opinion, which can not be substituted for fact. *In re Pike et al.*, 84 USPQ 235; *In re Renstrom*, 81 USPQ 390.

24. Furthermore, even if applicants provide sufficient data supporting their position, the examiner would like to point out that applicants' remarks are not commensurate in scope with the currently claimed invention. Claim 1 and 22 only require the reaction of (A) polyester polyol, (B) diisocyanate, and (C) hydroxylalkyl (meth) acrylate. Said claims are not limited to any type of stoichiometry for components (A), (B), and (C), and the currently claimed polyester polyol is required to contain at least one triol, which eliminates the presence of polyester polyol having a branch value of $n = 0$.

25. What's more, although the position has already been taken that claim 1 is not patentably distinct over Tomotsugu et al, the examiner concedes that Tomotsugu et al fail to teach the claimed method. However, this is a moot point since the claims are also rejected over Tomotsugu et al *in view of* Bristowe et al. One of ordinary skill would reasonably expect the

reaction system rendered obvious by the prior art to result in the same composition alleged by applicants since it is based on analogous reactants and methodology.

26. Finally, the examiner notes applicants' remarks stating that the motivation to combine Tomotsugu et al and Bristowe et al is not proper, i.e. the enhanced control of exotherms and avoidance of by-products is purely based on aromatic polymers and therefore not relevant to Tomotsugu et al. In response, the examiner would like to point out that urethane forming reactions between isocyanate and hydroxyl groups are commonly known within the art to be highly exothermic (regardless of whether it is based on aliphatic or aromatic compounds). Therefore, the examiner maintains sufficient motivation has been set forth since the combination of Bristowe et al and Tomotsugu et al would help control the amount of heat produced during the formation of the urethane groups.

Conclusion

27. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin J. Gillespie whose telephone number is 571-272-2472. The examiner can normally be reached on 8am-5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

28. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Rabon Sergent/
Primary Examiner, Art Unit 1796

B. Gillespie